

## REMARKS

Claims 1-2, and 4-16 remain pending in the application. Claim 14 has been previously withdrawn from consideration. Claim 4 has been amended without introduction of new matter. Favorable reconsideration is respectfully requested in view of the above amendments and the following remarks.

As a preliminary matter, it is noted that the Office Action is incomplete in that no examination of claims 15 and 16 appears to have been performed. These claims were added by way of the Amendment filed on December 13, 2007. It is therefore respectfully requested that the status of claims 15 and 16 be indicated in the next paper to be issued by the Office.

Claim 4 stands rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. This rejection is respectfully traversed.

The Office bases this rejection on the allegation that the recitation of “the filter” in claim 4 lacks sufficient antecedent basis. In response, claim 4 has been amended to now recite “the low pass filter”, antecedent basis for which can be found in claim 1. As there is only one filter recited in claims 1 and 4, this amendment is not believed to constitute a change in claim scope.

In view of the foregoing, it is respectfully requested that the rejection of claim 4 under the second paragraph of 35 U.S.C. §112 be withdrawn.

Claim 1 stands rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 5,517,685 (Aoyama et al.). This rejection is respectfully traversed.

The Aoyama et al. patent does not anticipate Applicants’ claimed mixer at least because it neither discloses nor suggests Applicants’ claimed “passive mixer” including “a feedback circuit operatively connected to said third and said second terminal.”

The Office alleges that the claimed feedback circuit can be found in Aoyama et al. as the LPF 49 in Figure 4. Applicants respectfully disagree. To begin with, Aoyama’s LPF 49 has only its input terminal connected to a terminal (the output) of the mixer 48. However, the other (output) terminal of the LPF 49 is supplied as a control voltage to a VCO 43, and is not fed back to any other terminal of the mixer 48. Hence, the arrangement of the LPF 49 fails to satisfy Applicants’ claim 1 requirement that the feedback circuit be “operatively connected to said third and said second terminal [of the mixing means].”

It is apparent that Aoyama et al.’s LPF 49 is in a feedforward path of the phase locked loop (PLL) depicted in Aoyama’s Figure 4, not a feedback path. Aoyama et al. do show a feedback path (constituted by the pre-scaler 44 and the first distributor 45) from the output of

the VCO 43 to a terminal of the mixer 48, but this feedback path likewise fails to satisfy the requirement of being “operatively connected to said third and said second terminal [of the mixing means].” Moreover, this feedback path does not include the LPF 49, as would further be required to satisfy the terms of Applicants’ claim.

The Office appears to support its rejection by focusing on the presence in Aoyama et al. of a loop from the IF output of the mixer 48 to the LO input of the mixer 48. However, Applicants respectfully contend that this loop is not a feedback path of the mixer 48 (i.e., the loop is not part of the mixer). Rather, the arrangement shown in Aoyama et al.’s Figure 4 is a phase locked loop (see, e.g., Aoyama et al. at column 6, lines 53-55) that includes both the mixer 48 and a feedback path. However, the purpose of the PLL’s feedback path is to lock the output frequency of the PLL, not to linearize or otherwise enhance the operation of the mixer 48.

For at least the foregoing reasons, it is respectfully asserted that the subject matter defined by claim 1 is patentably distinguishable over that which is shown in the Aoyama et al. patent. It is therefore respectfully requested that the rejection of claim 1 under 35 U.S.C. §102(b) be withdrawn.

Claims 1, 2, 5-7, and 9 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 4,090,139 (Hoover). This rejection is respectfully traversed.

The Hoover patent does not anticipate Applicants’ claimed mixer at least because it neither discloses nor suggests Applicants’ claimed “passive mixer” including “a feedback circuit operatively connected to said third and said second terminal, wherein the feedback circuit comprises a low pass filter,” as defined by independent claim 1.

The Office supports its rejection based on the configuration depicted in Hoover’s Figure 1, and in particular contends that Hoover discloses a feedback circuit comprising capacitor 69 and resistor 72. Applicants respectfully disagree because Hoover at, for example, column 2 lines 16-20 states that the output circuit for the cascode mixer “is connected at one terminal to output terminal 50 and at its other terminal to AC ground via capacitor 69.” (Emphasis added.) This means that the capacitor 69 needs to be sufficiently large to provide an AC ground.

Further, Hoover at, for example, column 2 lines 29-32 explain that the resistors 70 and 72 are for the purpose of providing DC bias for the COS/MOS transistors.

Thus, there is no signal path through either the capacitor 69 or either of the resistors 70 and 72, so their purpose cannot be to provide any feedback or bootstrapping.

It is further noted that Hoover's arrangement appears to be active, not passive, and therefore further fails to satisfy the terms of Applicants' claims.

The Office further supports its rejection by relying on Hoover's claim 15, which recites a "low-pass filtering network means." Applicants respectfully assert, however, that the arrangement disclosed in that claim fails to satisfy the terms of Applicants' claims at least because Hoover's "low-pass filtering network means" are part of "a cascode configuration", not a passive mixer, as would be required to satisfy the terms of Applicants claims. It is therefore unclear how this low-pass filtering network means could be interpreted as a feedback circuit of a mixer. It is further noted that claim 15 specifically states that the low-pass filtering network is "for providing first and second direct bias potentials ... and ... to apply said second direct bias potential ...." That is, the purpose of this network is for biasing, not feedback.

For at least the foregoing reasons, the subject matter defined by independent claim 1 as well as that defined by any of the dependent claims 2, 5-7, and 9, is patentably distinguishable over that which is shown by Hoover. It is therefore respectfully requested that the rejection of these claims under 35 U.S.C. §102(b) be withdrawn.

Claim 4 stands rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Hoover in view of U.S. Patent No. 5,263,198 (Geddes et al.). This rejection is respectfully traversed.

Claim 4 depends from claim 1, and is therefore patentably distinguishable over any combination of Hoover and Geddes et al. because that combination fails to disclose at least Applicants' claimed "passive mixer" including "a feedback circuit operatively connected to said third and said second terminal, wherein the feedback circuit comprises a low pass filter".

That Hoover fails to disclose these features was fully discussed above with reference to claim 1.

Geddes et al. fails to make up for the deficiencies of Hoover because it too lacks these features. The Office does not argue to the contrary, but instead relies on Geddes et al. merely for its disclosure of a DC-blocking capacitor in the LO-path. Thus, any combination of Geddes et al. with Hoover would still fail to include all of the features defined by claim 4.

For at least the foregoing reasons, the subject matter defined by claim 4, is patentably distinguishable over any combination of Hoover with Geddes et al. It is therefore respectfully requested that the rejection of claim 4 under 35 U.S.C. §103(a) be withdrawn.

Claims 8 and 10-13 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Hoover. This rejection is respectfully traversed.

Claims 8 and 10-13 variously depend from independent claim 1, and are therefore patentably distinguishable over the subject matter shown by the Hoover patent for at least the reasons set forth above with respect to claim 1, namely that Hoover fails to disclose or even suggest Applicants' claimed "passive mixer" including "a feedback circuit operatively connected to said third and said second terminal, wherein the feedback circuit comprises a low pass filter".

For at least the foregoing reasons, the subject matter defined by any of claims 8 and 10-13 is patentably distinguishable over the Hoover patent. It is therefore respectfully requested that the rejection of claims 8 and 10-13 under 35 U.S.C. §103(a) be withdrawn.

The application is believed to be in condition for allowance. Notice of same is respectfully requested.

Respectfully submitted,  
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